PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Shinya WATANABE , et al.

Docket No: Q64848

Appln. No.: 09/875,158

Group Art Unit: 1616

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For: PRODUCTION PROCESS OF CYCLOHEXENYL METHYL KETONES

DECLARATION UNDER 37 C.F.R. § 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Takeshi Yamamoto, declare and state as follows.

I am a co-inventor of the above identified application.

I graduated from the Shizuoka University, Faculty of Engineering, receiving a Master's Degree in March of 1969.

I have been employed by the assignee of the present application, now named the Takasago International Corporation, since April of 1969.

From April of 1969 to the present, I have been engaged in the synthesis of conventional and novel perfume materials at the Central Research Laboratory of said company.

I have reviewed the Official Actions in this application, the specification and claims of this application and the prior art relied upon by the Examiner, and am well acquainted with all of that material.

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I have performed, or have had performed under my direction and control, certain experimentation, which experimentation is described below.

In the experimentation below, U.S. Patent 4,334,098 Mookherjee et al (Mookherjee) is often identified simply as '098 so that the Tables will fit on a page.

Example II of '098 which occurs at columns 17-19 of '098 was duplicated. Example X which occurs at columns 22-24 of '098 was duplicated.

The results are set forth in the first Table which follows using the designation ('098) Ex. II and ('098) Ex. X.

Certain Comparative Experiments were then performed.

Comparative Examples 1 and 3 correspond to Ex. II of ('098) except the solvent was changed. All other conditions remained the same. In a similar fashion, Comparative Examples 2 and 4 correspond to Ex. X of ('098) except again only the solvent was changed. The results obtained are set forth in the second Table which follows.

In the third Table, the results obtained following the procedure of Example 2 and Example 8 of the present application are set forth.

Under the right-most column in each of these Tables, under the heading Product, the results of analyzing the reaction mixture for each process run (sampling and analysis by gas chromatography) are given. The contents of trans-2,6,6-trimethyl-3-cyclohexenyl methyl ketone (1a'); 2,6,6-trimethyl-2-cylcohexenyl methyl ketone (1b) and 2,6,6-trimethyl-1-cylcohexenyl

methyl ketone (1c) produced in each process run are given. The numbers represent the percent of the products obtained in the reaction mixture.

The Tables I referred to above are now set forth.

Reference Mookherjee:

Example	Solvent	Catalyst	Reaction Temperature	Reaction time	Product
('098) Ex.II	EtOH	KOH	Refl. (80℃)	25hr	(1a')-(1b):(1c)= 100:0:0
('098) Ex.X	MeOH	MeONa	Refl. (70℃)	24hr	(1a')-(1b):(1c)= 100:0:0

Comparative Experiment (Only solvent was changed from Mookherjee):

Example	Solvent	Catalyst	Reaction Temperature	Reaction time	Product
Comparative Example 1	H-(OCH$_2$CH$_2$)$_4$-OMe	KOH	80℃	25hr	(1a')-(1b):(1c)= 100:0:0
Comparative Example 2	H-(OCH$_2$CH$_2$)$_4$-OMe	MeONa	70℃	24hr	(1a')-(1b):(1c)= 100:0:0
Comparative Example 3	DMSO	KOH	80℃	25hr	(1a')-(1b):(1c)= 100:0:0
Comparative Example 4	DMSO	MeONa	70℃	24hr	(1a')-(1b):(1c)= 100:0:0

Present invention:

Example	Solvent	Catalyst	Reaction Temperature	Reaction time	Product
Example 2	H-(OCH$_2$CH$_2$)$_4$-OMe	t-BuOK	175℃	4hr	(1a')-(1b)-(1c)= 12.61:27
Example 8	DMSO	EtONa	130-140℃	6hr	(1a')-(1b)-(1c)= 34.7:45.4:19.9

From the above results, I am able to conclude as follows.

The α-form (1b) and the β-form (1c) cannot be obtained following the process of Mookherjee ('098). This is clear, in my opinion, from the results of ('098) Ex. II and ('098) Ex.

X, where the α-form (1b) and the β-form (1c) cannot be obtained when the reaction temperature is 90°C or lower. In my opinion, the α-form (1b) and the β-form (1c) can only be obtained when the conditions of the catalyst, the solvent and the reaction temperature of the present invention are all met.

My conclusion is further confirmed by the results of Comparative Example 1 to Comparative Example 4, clearly supportive of my conclusion even when the solvent is changed from that of Mookherjee ('098).

In distinction, as shown in Example 2 and Example 8 from the present specification, following the process of the present invention one can obtain the α-form (1b) and the β-form (1c) which cannot be obtained by the processes of Mookherjee ('098) and the processes of the Comparative Examples.

Simply stated, the reaction conditions (catalyst, solvent, reaction temperature) must be different from those of Mookherjee ('098) to obtain the products desired in accordance with the present invention.

As established above, the present invention is different from Mookherjee ('098) with respect to the final product and also the catalyst, solvent, and reaction temperature. As shown in the experiments above, the α-form (1b) and the β-form (1c) according to the present invention are not obtained by the process of Mookherjee ('098) and in my opinion and there is no suggestion in Mookherjee ('098) to prepare the α-form (1b) and the β-form (1c).

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In my opinion, the above results establish that it is not necessarily the case that similar products will be obtained from similar starting materials. Rather, using the same starting materials a different product can and will be obtained by changing the reaction conditions (catalyst, solvent, reaction temperature).

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 21/4/2004

Takeshi Yamamoto